N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Advanced trench cell design

1.2 Applications

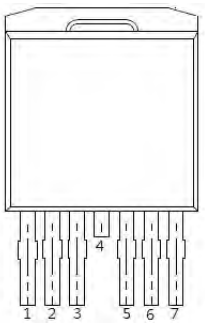
- ☑ LCD TV appliances
- ☑ LCDM appliances
- ☑ High power inverter system

1.3 Quick reference

- ☑ BV ≧ 30 V
- ☑ P_{tot} ≦ 300 W
- ☑ I_D ≦ 300 A
- ☑ $R_{DS(ON)}$ ≦ 0.9 mΩ @ V_{GS} = 10 V
- ☑ $R_{DS(ON)}$ ≦ 2.0 mΩ @ V_{GS} = 4.5 V

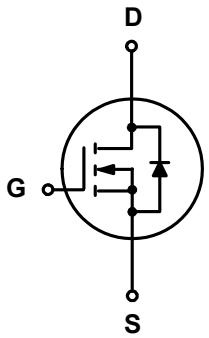
2. Pin Description

Pin	Description
1	Gate(G)
2,3	Source (S)
4	Drain(D)
5,6,7	Source (S)



Top View

TO-263-7L



3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_C = 25 ℃	-	30	V
V_{GS}	Gate-Source Voltage	T_C = 25 ℃	-	± 20	V
I_D*,***	Drain Current (DC)	T_C = 25 ℃, V_{GS} = 10 V	-	300	A
		T_C = 100 ℃, V_{GS} = 10 V	-	150	A
I_{DM}*,**,***	Drain Current (Pulsed)	T_C = 25 ℃, V_{GS} = 10 V	-	300	A
P_{tot}*	Drain power dissipation	T_C = 25 ℃	-	300	W
T_{stg}	Storage Temperature		- 55	175	℃
T_J	Junction Temperature		-	175	℃
I_S	Continuous-Source Current	T_C = 25 ℃	-	300	A
E_{AS}*	Single Pulsed Avalanche Energy	V_{DD}= 30 V , L= 1 mH	-	1653	mJ
$R_{\theta JA}$*	Thermal Resistance- Junction to Ambient		-	40	℃/W
$R_{\theta JC}$*	Thermal Resistance- Junction to Case		-	0.5	

Notes：

* Surface Mounted on 1 in^2 pad area, t ≤ 10 sec

** Pulse width ≤ 300 μs, duty cycle ≤ 2 %

*** limited by bonding wire

4. Marking Information

Product Name	Marking
UP300N03D7	N300N03D7 AYWW01 XXXXXX

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
UP300N03D7	TO263-7L(D2-PAK)			800	

6. Electrical Characteristics (T_A=25 ° Unless Otherwise Noted)

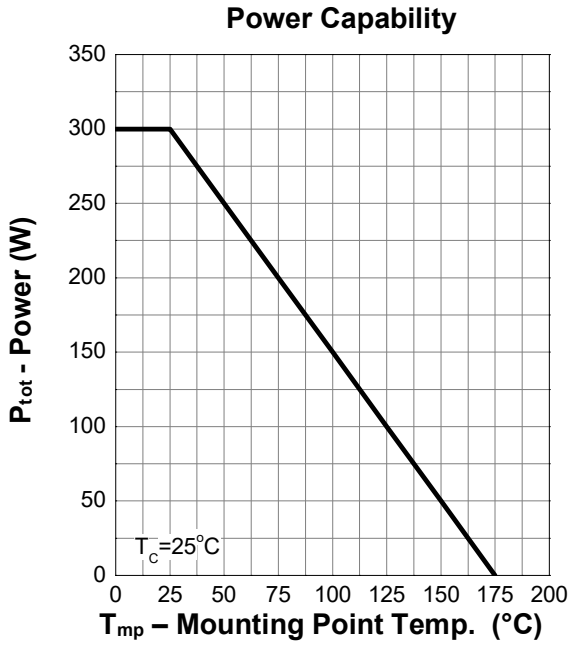
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 250 μA	30	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS} = 250 μA	1	-	2	V
I_{DSS}	Drain Leakage Current	V_{DS} = 24 V, V_{GS} = 0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{DS} = 0 V, V_{GS} = ± 20 V	-	-	±100	nA
$R_{DS(ON)}$[a]	On-State Resistance	V_{GS} = 10 V, I_{DS} = 50 A	-	0.8	0.9	mΩ
		V_{GS} = 4.5 V, I_{DS} = 30 A	-	1.8	2.0	
Diode Characteristics						
V_{SD}[a]	Diode Forward Voltage	I_{SD} = 50 A, V_{GS} = 0 V	-	-	1.3	V
t_{rr}	Reverse Recovery Time	I_{DS} = 50 A, V_{GS} = 0 V dI_{SD}/dt = 100 A/μs	-	23	-	nS
Q_{rr}	Reverse Recovery Charge		-	13	-	nC
Dynamic Characteristics[b]						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 15 V Frequency = 1 MHz	-	11263	-	pF
C_{oss}	Output Capacitance		-	1317	-	
C_{rss}	Reverse Transfer Capacitance		-	480	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 15 V, VG_{EN} = 10 V, R_G = 3.9 Ω, R_L = 0.3Ω, I_{DS} = 50 A	-	26	-	nS
t_r	Turn-on Rise Time		-	201	-	
t_d(off)	Turn-off Delay Time		-	165	-	
t_f	Turn-off Fall Time		-	141	-	
Gate Charge Characteristics[b]						
Q_g	Total Gate Charge	V_{DS} = 15 V, VGS = 10 V, I_{DS} = 50 A	-	211	-	nC
Q_{gs}	Gate-Source Charge		-	45	-	
Q_{gd}	Gate-Drain Charge		-	38	-	

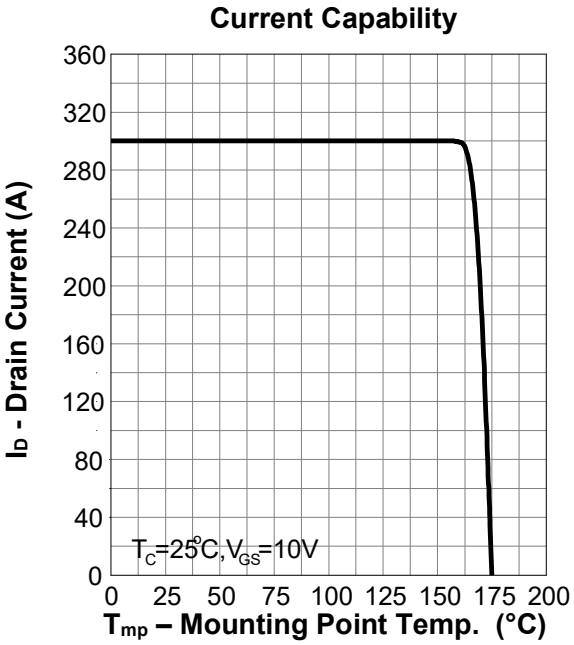
Notes：

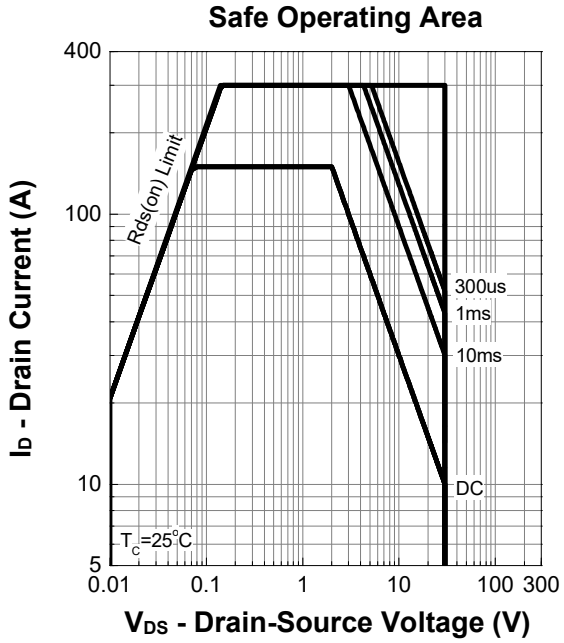
a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

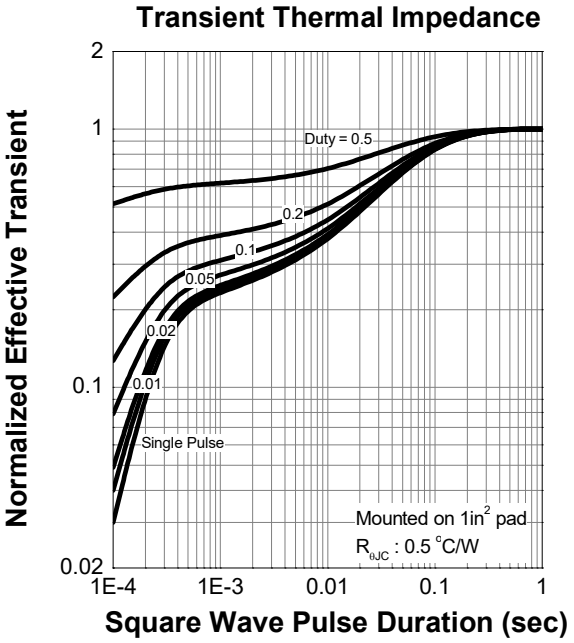
b : Guaranteed by design, not subject to production testing

7. Typical Characteristics

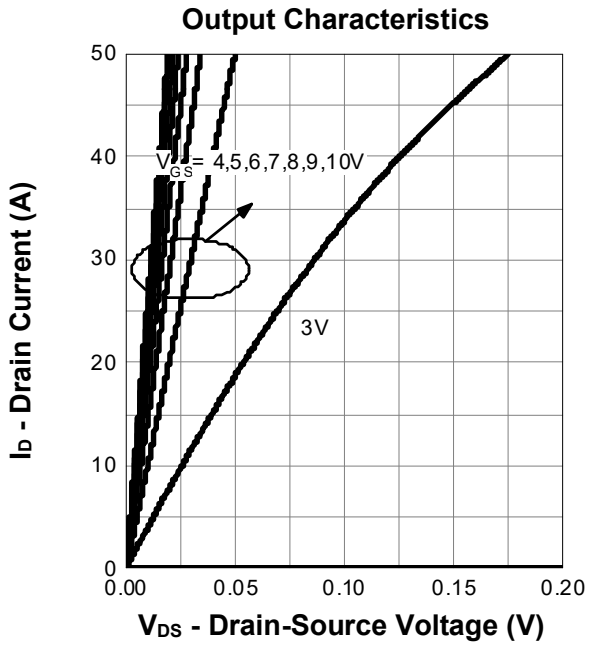


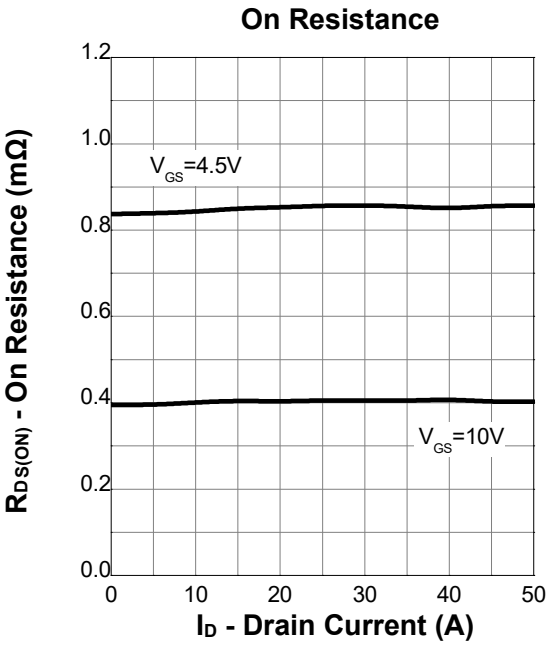


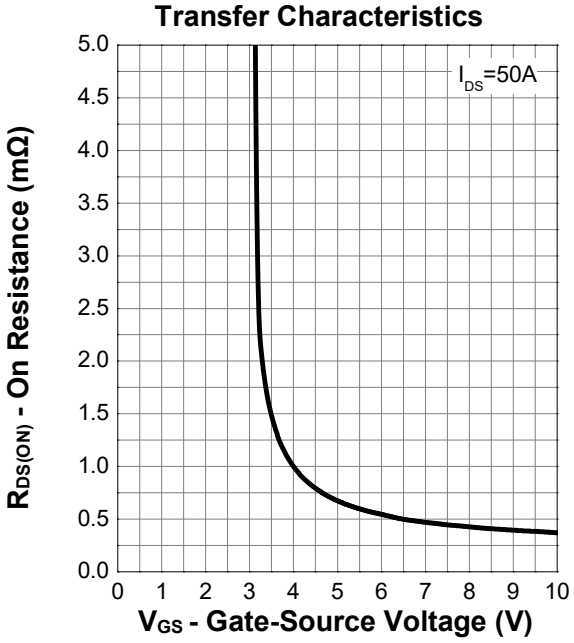


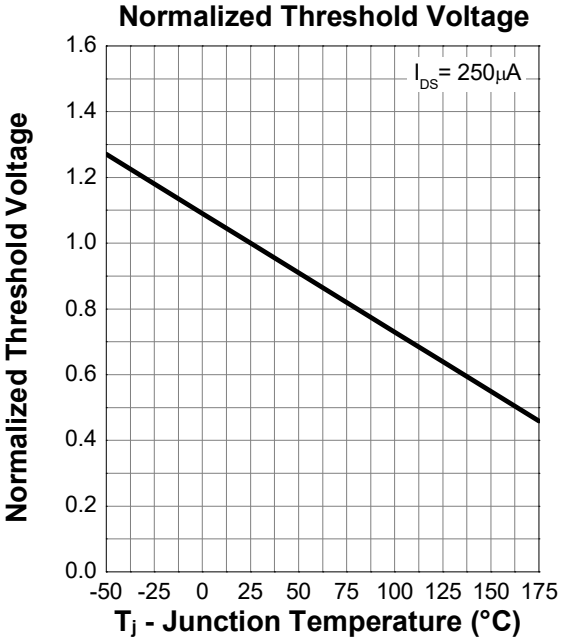


7. Typical Characteristics (cont.)









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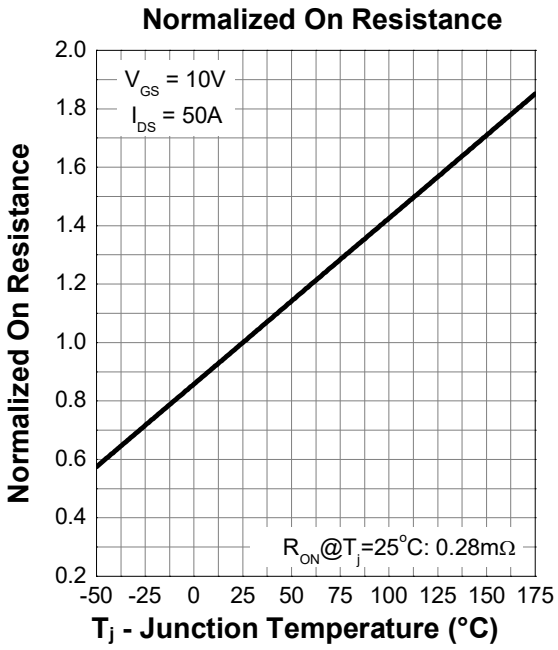

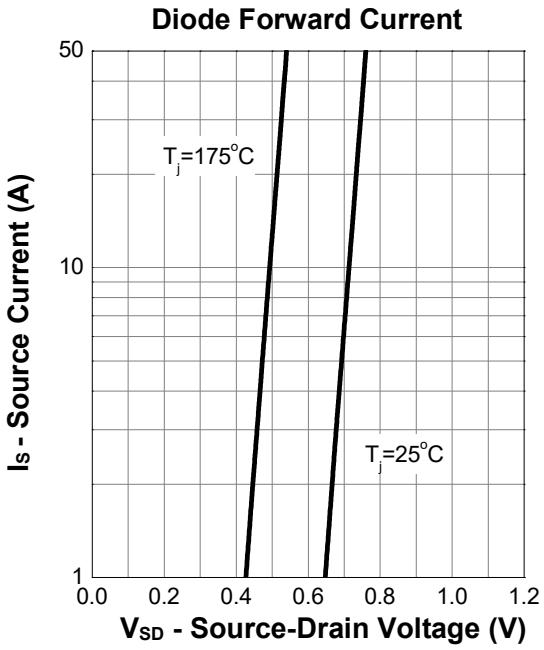

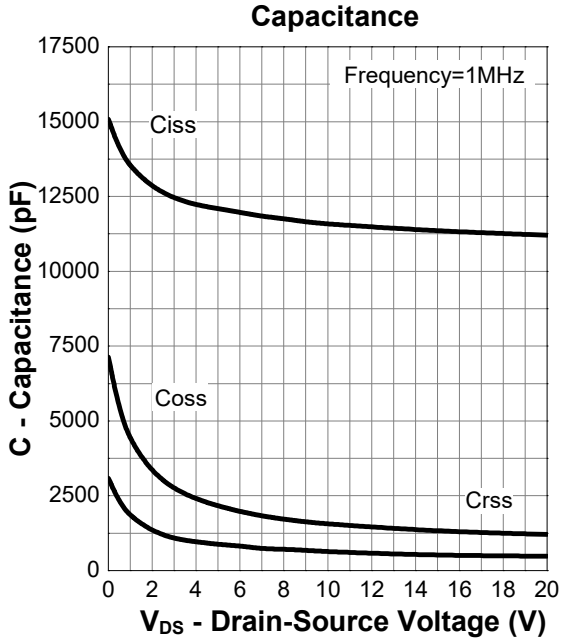

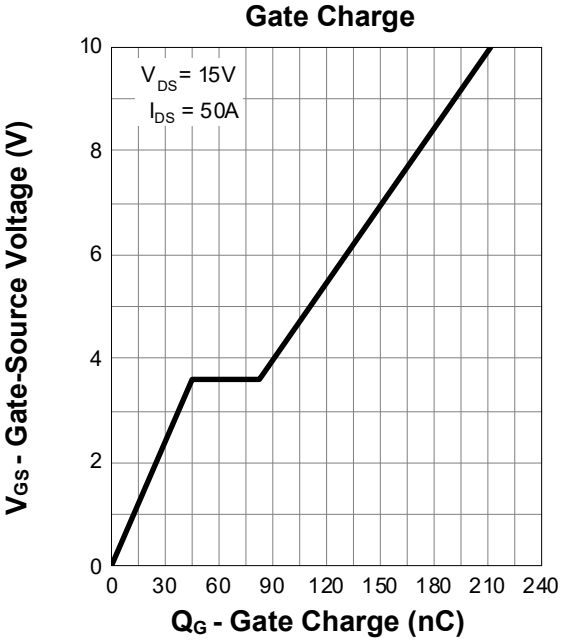

8. Package Dimensions

TO-263-7L Package